


BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES
IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application of

Applicants : G. Sandhu et al.
Serial No. : 09/998,073
Filed : November 30, 2001
Title : METHOD AND SYSTEM PROVIDING HIGH FLUX OF POINT OF
USE ACTIVATED REACTIVE SPECIES FOR SEMICONDUCTOR
PROCESSING
Docket No. : MIO 0084 PA
Examiner : G. Winter
Art Unit : 1746
Confirm. No. : 4531

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REPLY BRIEF ON APPEAL

This Reply Brief is being filed pursuant to the provisions of 37 CFR 1.193(b) in response to the Examiner's Answer mailed February 2, 2004. Arguments responsive to the issues raised in the Answer are set forth below. Pursuant to §1.193(b), the examiner is requested either to acknowledge receipt and entry of the reply brief or withdraw the final rejection and reopen prosecution to respond to the reply brief.

Claims 46-58 and 60-69 are not anticipated by Elliott et al (US 5,669,979).

A prior art reference anticipates a claim when the reference discloses every feature of the claimed invention, either explicitly or inherently (see *Hazani v. Int'l Trade Comm'n*, 126 F.3d 1473, 1477, 44 USPQ2d 1358,1361 (Fed. Cir. 1997) and *RCA Corp. v. Applied Digital Data Systems, Inc.*, 730 F.2d 1440, 1444, 221 USPQ 385, 388 (Fed.Cir. 1984)).

The appellants assert that there are limitations in independent claims 46 and 64 which do not "read on" something disclosed in the reference (see *Kalman v. Kimberly-Clark Corp.*, 713 F.2d 760, 772, 218 USPQ 781, 789 (Fed. Cir. 1983), cert. denied, 465 U.S. 1026 (1984)). Elliott et al. specifically teach delivering a laser beam of UV radiation "at an acute angle to the surface of the substrate, the beam striking the surface at a long and narrow reaction region." See the abstract of Elliott et al. In references to Figs. 2 and 2A, Elliott et al. teach that the arrangement of optics used produces a "final beam striking the surface [that] gives the appearance of a knife edge." See col. 10, lines 13-14. In reference to Figs. 15 and 16, Elliott et al. teach "foreign material 410 on a surface 412 of an eight-inch diameter substrate 414 is removed by a UV initiated reactive process in which energy in a knife-edge shaped laser beam 416 is absorbed by the foreign material." See col. 20, lines 20-24. Elliott et al. also teach that a "stream of input gas is blown across the region where the laser beam is striking the foreign material by a nozzle 434." See col. 20, lines 49-51.

Although the optical component that functions to converge the beam at a point is adjustable as noted by the examiner on page 9 of the Examiner's Answer, the appellants note that the location of the beam's point of convergence as taught by Elliott et al. is either at the surface of the workpiece to produce a knife edge (Fig. 2A) or below the surface of the workpiece to produce the narrow reaction region (Fig. 2). Additionally, unlike that which has been suggested by the examiner also on page 9, nowhere in Elliott et al. is it disclosed that the actual point of convergence relative to the wafer is adjustable "by adjusting the thickness of the workpiece." However, in reference to Fig. 15 of Elliot et al., the examiner is correct in stating that "the beam is shown to converge at the workpiece see element 416" (id., page 5), and that "figures 3A and 3B show different energy densities at the work piece surface"(id, page 9, emphasis added).

Hence, the appellants have consistently maintained that nowhere in Elliott et al. is the limitation recited by independent claim 46 of "a source of electromagnetic radiation adapted to converge a beam produced thereby in said flow in close proximity to the surface

of the workpiece, but spaced a finite distance therefrom, to dissociate said gaseous constituent to produce a high flux of activated reactive species that chemically treats said surface of said workpiece," taught or suggested. Additionally, nowhere in Elliott et al. is the limitation recited by independent claim 64 of "an electromagnetic radiation source configured such that upon operation of said electromagnetic radiation source, a beam produced thereby converges in said second region in close proximity to, but not on, said workpiece surface to dissociate said gaseous constituent into an activated species that chemically reacts with said workpiece surface," taught or suggested.

Such limitations noted above make the recited invention of claims 46-58 and 60-69 structurally different from the apparatus of Elliott et al, in that it fairly conveys to a person of ordinary skill in the pertinent art that the electromagnetic radiation source is made up of an arrangement of elements that will produce a beam in the manner recited by independent claims 46 and 64. Unlike that which has been stated on page 11 of the Examiner's Answer, appellants have never admitted at anytime that the recited invention is identical to the device of Elliott et al.

In view of the above points, the appellants argue that the examiner's anticipation rejection of independent claims 46 and 64 is founded on a disregard for recitations of the above cited limitations by giving them no patentable weight. Apparently, the examiner has ignored the fact the claims recite a system this is actually "configured" or "adapted" to converge a beam in close proximity to the surface of the workpiece, but not on or spaced a finite distance therefrom, as opposed to a system merely being capable of doing so. As mentioned above, anticipation requires that each and every limitation be disclosed by a single reference, explicitly or inherently, and not that a reference be capable of performing the same function. In missing the above cited limitations, Elliott et al. fail to explicitly disclose each and every limitation of claims 46-58 and 60-69.

Elliott et al. also fail to inherently disclose the recited invention of claims 46-58 and 60-69. Inherency requires that the inherent limitation must happen all the time, and not some of the time. See e.g., *In re Oelrich*, 666 F.2d 578, 581, 212 USPQ 323 (CCPA

1981)(inherency may not be established by probabilities or possibilities. Mere fact that a certain thing may result from a given set of circumstances is not sufficient). In this situation, the examiner has admitted that the system of Elliott et al. "need not be operated in the manner claimed...." See *id.*, page 10. Accordingly, Elliott et al. also cannot form the basis of an anticipatory rejection, as inherency cannot be established by the (hindsight?) operational possibilities asserted by the examiner.

The examiner has stated that "a reference capable of performing the same function and possessing the same structure will provide a proper anticipation rejection." See *id.*, page 11. Hypothetically, even if the recited system of the present invention and the system of Elliott et al. were structurally identical (which they are not), it is well settled in the somewhat analogous computer art field that a structurally identical computer system adapted for one purpose is not anticipated by a structural identical computer system adapted for another purpose, if that functional limitation is not disclosed by a single reference explicitly or inherent. Following such reasoning of the examiner that "a reference capable of performing the same function and possessing the same structure will provide a proper anticipation rejection" would destroy patentability of a number of patented inventions in more than the computer arts field, and would also be a holding of law beyond the intent of 35 U.S.C. § 102(b).

Additionally, the examiner noting on page 11 of the Examiner's Answer "that inserting a thinner wafer into the device of Elliott, thus allowing the incident radiation to converge above the surface..." also cannot form the basis of an anticipatory rejection as Elliott et al. fails to teach or suggest such a feature. The examiner has chosen to reject the claims under §102(b), and thus the teachings of Elliott et al. combined with the examiner's suggested (hindsight?) configuration is not a single reference.


In conclusion, claims 47-58, 60-63, and 65-69 are not anticipated by Elliot et al., as the recited invention is structurally distinguishable from the device of Elliot et al. The appellants have not presented argument based solely on how the appellants will use the apparatus, but rather arguments pointing out that the recited language makes the claimed

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invention differ from the prior art and that the examiner has ignored such language. The appellants respectfully assert that they have meet the novelty requirement set forth in 35 U.S.C. § 102(b) and, as such is entitled to a patent.

Respectfully submitted,
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Fax Number: (703) 305-0942

Client Number: MIO 0084 PA/40409.163

Pages: 6
(including cover)

Comments: OFFICIAL OFFICIAL OFFICIAL

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